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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,907	09/11/2003	Salih Burak Gokturk	CANE.P043	6370

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SHEMWELL MAHAMED I LLP  
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SAN JOSE, CA 95129

EXAMINER
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STREGE, JOHN B

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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03/04/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/660,907	<b>Applicant(s)</b> GOKTURK ET AL.	
	<b>Examiner</b> JOHN B. STREGE	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/01/07 has been entered.

***Response to Amendment***

2. The amendment received 11/01/07 has been entered in full.

***Response to Arguments***

3. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection. However, as certain rejections are being maintained the arguments will be addressed here. Specifically the Applicant questions the enablement of Yasui (third paragraph on page 12). However the Examiner gives Full confidence and consideration for any US Patent and therefore is not in authority to question the enablement of Yasui. Yasui discloses obtaining 3 dimensional shape data in order to estimate the physique of an occupant more reliably (col. 5 lines 13-20, and col. 6 lines 21-31). The Examiner considers this to be enabling.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui USPN 6,422,598 in view of Stopper et al. USPN 6,302,438 (hereinafter "Stopper").

Regarding claim 1, Yasui discloses a method to determine deployment level of an airbag in a vehicle (col. 1 lines 10-13), the method comprising the following steps: (a) repeatedly capturing a plurality of frames of three dimensional depth images of a scene that includes a region of a seat in said vehicle (col. 4 lines 20-39, col. 5 lines 13-67, and col. 6 lines 21-32), from which plurality of frames data representing occupancy of said seat may be determined with a confidence level greater than if data from a single frame were used (Yasui discloses using multiple frames [col. 3 lines 31-35, col. 7 lines 1-33] which inherently would improve the confidence level more than just a single frame); and repeatedly determining occupancy information using confidence enhancing plurality of frames captured at step (a) wherein determine said occupancy information using confidence enhancing plurality of frames wherein determined said occupancy information is useable to determine deployment level to intelligently control deployment of said airbag (col. 6 line 63-col. 7 line 44).

However, Yasui fails to specifically disclose determining the depth information based on a time of flight characteristic of the reflected light. However, the examiner maintains that it was well known in the art to determine occupant depth information based on a time of flight characteristic of reflected light, as taught by Stopper.

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In the same field of endeavor, Stopper discloses an occupant detection system comprising measuring range information of an occupant by using the time of flight of light reflected in a scene, as disclosed at column 13 lines 12-33, which reads on "processing resources to determine depth information for an object in said scene based upon at least one time-of-flight characteristic of reflected light emitted by said light source and captured by said array, said processing resources configured to determine occupancy data for said object based upon reflected light from said scene captured by said array".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing determining the depth information based on a time of flight characteristic of the reflected light, as taught by Stopper, for the purpose of providing a method to determine depth information that can be performed in real time and is responsive to typical occupant motion (column 13 lines 9-11).

Regarding claim 2, Yasui discloses when an acceleration greater than a threshold is detected by an acceleration sensor it is determined that a crash may have occurred and the image capture frame rate is increased while the resolution of the image capture resolution is decreased to a one dimensional image in order to accommodate the increase in frame rate, further comprising acquiring occupancy information after the crash and indicating a airbag deployment level based on the occupancy information, as disclosed at column 6 line 63 - column 7 line 44.

Regarding claim 3, Yasui discloses determining an airbag deployment level and using the level to intelligently control deployment of the airbag (col. 7 lines 35-45).

Claim 4 has limitations that have already been addressed above in the rejections of claims 2 and 3.

Regarding claim 5, as discussed above Yasui discloses classifying the passenger based on three-dimensional data, which reads on using a training algorithm.

Regarding claim 6, Yasui discloses determining position information of an occupant of said seat relative to a region from which said airbag is deployable (col. 5 lines 13-47).

Regarding claim 7, as discussed above Yasui discloses classifying the passenger of the seat.

Regarding claim 8, it is well known to include a training algorithm such as a neural network for training an occupant sensor thus the Examiner declares official notice. The motivation for using a neural network with an occupant sensor is that it would improve the accuracy of the system by using past results.

Regarding claim 9, Yasui discloses capturing images of lower resolution at an increased rate, after a possible crash, which reads on "wherein step (a) includes capturing at least one depth image with lower resolution than resolution used before occurrence of said airbag-deployment triggering event".

Regarding claim 10, Yasui further discloses not deploying an airbag if a passenger is extremely close to the airbag and also discloses deploying an airbag with a weak force if a passenger is slightly close to the airbag, as disclosed at column 5 lines

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56-67, which reads on "indicating the deployment level of the airbag based at least in part on the occupancy information includes lowering the deployment level because the occupant is less than a maximum distance from an area from which the airbag is to be deployed".

Regarding claim 11, Yasui discloses processing input from at least one sensor that signals occurrence of a collision involving said vehicle (col. 7 line 13-45).

Regarding claim 12, Yasui discloses mandatory deployment, reduced power deployment, non-deployment, and unconditional non-deployment (col. 5 line 40-col. 6 line 10).

Regarding claim 13, Stopper disclose acquiring intensity based information (col. 13 lines 11-35).

Regarding claim 14, Yasui discloses disabling airbag deployment when at least a portion of said occupant is determined to be too close to a region from which said airbag is deployable (col. 5 lines 56-59).

Regarding claim 15, Yasui discloses everything as applied above in the rejection of claim 1. Yasui further discloses where the image sensor is a CMOS type image sensor comprising an array of light-sensitive pixels which capture reflected light from the scene, as disclosed at column 6 line 63 - column 7 line 33, which reads on "an array of light-sensitive pixels disposed to capture reflected light from said scene, including light emitted by said light source, such that in at least one scene capture, three-dimensional data representing said scene are captured". However, Yasui fails to specifically disclose determining the depth information based on a time of flight characteristic of the reflected

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light. However, the examiner maintains that it was well known in the art to determine occupant depth information based on a time of flight characteristic of reflected light, as taught by Stopper.

In the same field of endeavor, Stopper discloses an occupant detection system comprising measuring range information of an occupant by using the time of flight of light reflected in a scene, as disclosed at column 13 lines 12-33, which reads on "processing resources to determine depth information for an object in said scene based upon at least one time-of-flight characteristic of reflected light emitted by said light source and captured by said array, said processing resources configured to determine occupancy data for said object based upon reflected light from said scene captured by said array".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing determining the depth information based on a time of flight characteristic of the reflected light, as taught by Stopper, for the purpose of providing a method to determine depth information that can be performed in real time and is responsive to typical occupant motion (column 13 lines 9-11).

Regarding claim 16, Yasui discloses when an acceleration greater than a threshold is detected by an acceleration sensor it is determined that a crash may have occurred and the image capture frame rate is increased while the resolution of the image capture resolution is decreased to a one dimensional image in order to accommodate the increase in frame rate, further comprising acquiring occupancy



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information after the crash and indicating a airbag deployment level based on the occupancy information, as disclosed at column 6 line 63 - column7 line 44.

Claim 17 is similarly analyzed to claim 3.

Claim 18 is similarly analyzed to claim 4.

Claim 19 is similarly analyzed to claim 5.

Claim 20 is similarly analyzed to claim 6.

Claim 21 is similarly analyzed to claim 7.

Claim 22 is similarly analyzed to claim 8.

Claim 23 is similarly analyzed to claim 9.

Claim 24 is similarly analyzed to claim 10.

Claim 25 is similarly analyzed to claim 11.

Claim 26 is similarly analyzed to claim 12.

Claim 27 is similarly analyzed to claim 13.

Claim 28 is similarly analyzed to claim 14.

Claim 29 is similarly analyzed to claim 8.

Regarding claim 30, Yasui determines whether an image contains a face (col. 5 lines 29-46).

Regarding claim 31, it is inherent that the system of Yasui is carried out on a processor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN B. STREGGE whose telephone number is

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(571)272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "John Strege", with a stylized flourish at the end.

John Strege  
AU 2624